

22323

22232

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Figures to the right indicate full marks.
 - (4) Assume suitable data, if necessary.
 - (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following :

10

- (a) Define :
 - (i) Word
 - (ii) Nibble
- (b) State the number of select lines for
 - (i) 8 : 1 Mux
 - (ii) 4 : 1 Mux
- (c) State any four applications of flip-flop.
- (d) State any one application of
 - (i) OR gate
 - (ii) AND gate
- (e) List different addressing modes of 8086.
- (f) State applications of segment and pointer registers.
- (g) State any two shift instructions of 8086 with format.



2. Attempt any THREE of the following : 12

- (a) Convert decimal numbers 129, 181 into Binary.
- (b) Simplify the given minterm into standard SOP form
- $$Y\{A, B, C, D\} = \{A + \bar{C} + D\} + (\bar{B} + C + \bar{D})$$
- (c) Draw symbol and truth table for SR and T-Flip-flop.
- (d) Simplify the following expression and draw logic diagram :

$$Y = (A\bar{B} + A + \bar{B}) A \cdot B$$

3. Attempt any THREE of the following : 12

- (a) Design the following gates using universal logic gate and write their truth table :
- (i) OR
- (ii) NOT
- (b) Interpret the following program and specify the output of following situation :
- ```
MOV BX, 55F9 H
MOV AX, 3A69 H
```
- (i) Masking of higher nibble of AX
- (ii) Rotate left through carry contents of BX by four positions.
- (iii) Shift left contents of AX by 6 position
- (iv) ADD AX, BX
- (c) Represent following expression using MUX :
- $$Y = \Sigma m (0, 3, 5, 9, 10, 12, 14)$$
- (d) Compare Min. and Max. mode of operation of 8086.

**4. Attempt any THREE of the following : 12**

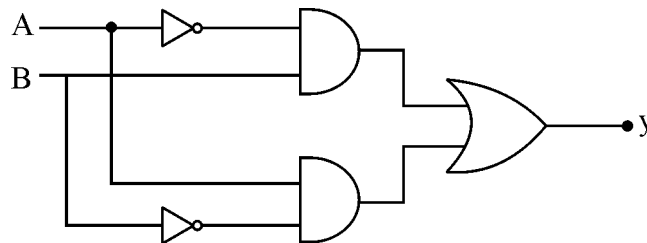
- (a) Explain the process of physical address calculation with suitable example.
- (b) Draw and explain Half Adder and specify its truth table.
- (c) Draw symbols and write truth table for :
  - (i) JK-Flip-flop
  - (ii) D-Flip-flop
- (d) Compare CISC with RISC processor (at least four points).
- (e) With suitable example, explain types of triggering the flip-flop.

**5. Attempt any TWO of the following : 12**

- (a) Write ALP to multiply 8 bit number and 16 bit number.
- (b) State and explain concept of memory segmentation and pipelining.
- (c) Explain binary to Gray code conversion with suitable example.

**6. Attempt any TWO of the following : 12**

- (a) Describe pipeline architecture concept of CISC which help in improving system throughput.
- (b) Given the following logic diagram in Fig. (1), write its truth table. Identify equivalent gate for the obtained truth table.



**Fig-1**

- (c) Write ALP for finding smallest number from Array of 'n' numbers.

